PART I - ADMINISTRATIVE

Section 1. General administrative information

Title of project

Operate And Maintain Umatilla Hatchery Satellite Facilities

BPA project number: 8343500
Contract renewal date (mm/yyyy): 1/2000 ☐ **Multiple actions?**

Business name of agency, institution or organization requesting funding
Confederated Tribes of the Umatilla Indian Reservation

Business acronym (if appropriate) CTUIR

Proposal contact person or principal investigator:

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NPPC Program Measure Number(s) which this project addresses
7.4I.1., 7.4I.2

FWS/NMFS Biological Opinion Number(s) which this project addresses
Number 383 - NMFS Biop for 1995-1998 Hatchery Operations Section IV.C.3.b.

Other planning document references
CRITFC, 1995. Wy-Kan-Ush Mi Wa-Kish-Wit , Volume II. Subbasin Plans - Umatilla River

ODFW, 1986. Umatilla Fisheries Restoration Plan - Present and Proposed Flow Enhancement and Fishery Rehabilitation Projects and Costs

CTUIR, 1990. Umatilla Subbasin Plan - Section IV. Andromous Fish Production Plans

ODFW & CTUIR, 1990. Umatilla Hatchery Master Plan - Production Profile and Facilities Needed to Implement Program

CTUIR, 1998. Draft Umatilla Hatchery Supplemental Master Plan - Section VI. Facilities Needed to Implement Plan

ODFW/CTUIR 1998. Umatilla Hatchery and Basin Annual Operation Plan (AOP) - Sections II through VII

Short description
Acclimate juvenile salmon and steelhead prior to release in the Umatilla Basin. Collect, hold and spawn broodstock and provide eggs to ODFW and other hatcheries for incubation, rearing and later release into the Umatilla Basin.

Target species
Summer steelhead, coho, fall and spring chinook

Section 2. Sorting and evaluation

Subbasin
Umatilla, Walla Walla

Evaluation Process Sort

CBFWA caucus	Special evaluation process	ISRP project type
Mark one or more caucus	If your project fits either of these processes, mark one or both	Mark one or more categories
☒ Anadromous fish ☐ Resident fish ☐ Wildlife	☒ Multi-year (milestone-based evaluation) ☐ Watershed project evaluation	☐ Watershed councils/model watersheds ☐ Information dissemination ☒ Operation & maintenance ☐ New construction ☐ Research & monitoring ☐ Implementation & management ☐ Wildlife habitat acquisitions

Section 3. Relationships to other Bonneville projects

Umbrella / sub-proposal relationships. List umbrella project first.

Project #	Project title/description
	Umatilla Artificial P:roduction O & M
8343500	Umatilla Hatchery Satellite Facilities O & M (subject sub-proposal)
8403300	Umatilla Hatchery O & M (sub-proposal submitted separately)

Other dependent or critically-related projects

Project #	Project title/description	Nature of relationship

8802200	Umatilla Fish Passage Operations	The passage operations project provides adult recovery information and broodstock for spawning, and provide passage for outmigrating hatchery produced juveniles.
New #	NEOH Hatchery - Walla Walla Component - Design, and Construction	This project provides for design and construction of new artificial production facilities which will be operated under project no. 8343500 when completed.
8805302	Umatilla Hatchery Supplement Facility Design, and Construction	Same as box above
9000501	Umatilla Natural Production M & E	The UBNPM&E project provides biological information related to the outcome of the production goals.
8710001	Umatilla River Basin Anadromous Fish Habitat Enhancement	The URBAFHE project provides increased habitat for fish utilization.
9000500	Umatilla Hatchery M & E	The UHM&E project provides biological information related to the operation of the satellite facilities and evaluates the success of the artificial production program.
8902401	Umatilla River WEID/Screens M & E	The URW/SM&E project provides biological information related to the operation of the production program.
8343600	Umatilla Passage Facilities O & M	The UPFO&M project assists in preventative and heavy maintenance at all Umatilla hatchery satellite facilities.
	Little White Salmon Hatchery O & M	LWSH provides fall and spring chinook smolts for acclimation and release into the Umatilla River basin.

Section 4. Objectives, tasks and schedules

Past accomplishments

Year	Accomplishment	Met biological objectives?
1998	Acclimated and released 19.9 million summer steelhead, coho, and fall and spring chinook from project facilities from 1983 to 1998.	Yes, thousands of fish released have been caught in ocean and Columbia River sport and commercial fisheries and annual adult returns to the Umatilla River have ranged from 3,500 to 8,000 in the last 10 years

1998	Held and spawned approximatly 6,100 broodstock in project facilities from 1983 to 1998.	Yes, approximately 8.95 million salmon and steelhead eggs were taken and transported to ODFW hatcheries for incubation, rearing, and later release back into project juvenile acclimation/release facilities.

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Increase adult salmon and steelhead survival and homing to the Umatiila River Basin	a	Hold (acclimate) and feed groups of juvenile salmonids at Bonifer, Minthorn, Imeques C-mem-ini-kem, Thornhollow and another acclimation facility (to be constructed in 1999) before release into the Umatilla River Basin
		b	Collect species composition, marks, size and numbers of fish trapped at Westland Canal juvenile facility during trapping operations to give an indication of outmigration timing
		c	Determine total survival, contribution to ocean and Columbia River fisheries and escapement to the Umatilla River and other terminal areas of all coded-wire tagged groups released into the Umatilla River Basin
		d	Maintain juvenile acclimation release facilities in good working order
2	Provide eggs for Umatilla River production programs	a	Collect, hold and artificially spawn broodstock at the Threemile Dam (fall chinook and coho), S. Fk. Walla Walla (spring chinook), and Minthorn (steelhead) adult holding/ spawning facilities.
		b	Assist ODFW in collecting samples from prespawn mortalities and spawned fish for disease analysis
		c	Maintain adult holding/spawning

			facilities in good working order
3	Participate in planning and review process for the new Umatilla Hatchery supplement and the NEOH - Walla Walla Hatchery	a	Review and comment on engineering designs and follow up with engineers as necessary during planning and construction of incubation and rearing facilities planned at the S. Fk. Walla Walla River site
4	Increase production of Carson Stock CHS for release ino the Umatilla River	a	USFWS to provide services needed to mark100,000 CHS from Carson Hatchery
		b	USFWS toprovide services needed to produce 350,000 from Little White Salmon Hatchery

Objective schedules and costs

Obj #	Start date mm/yyyy	End date mm/yyyy	Measureable biological objective(s)	Milestone	FY2000 Cost %
1	1/2000	06/2000	Achieve targets for juvenile salmon and steelhead acclimation and release	Document increasing trends in adult returns and natural production	45.00%
2	1/2000	12/2000	Achieve Umatilla broodstock and egg targets and provide to ODFW and other hatcheries	Successfully hold and spawn adults annually	35.00%
3	1/2000	12/2000			4.00%
4	1/2000	12/2000	Successfully produce 100,000 spring chinook at Carson Hatchery and 350,000 at Little White Salmon Hatchery prior to release in the Umatilla River Basin	Annually receive designated numbers of healthy fish at Umatilla Basin juvenile acclimation/release facilities	16.00%

				Total	100.00%

Schedule constraints
Availability of broodstock and smolt production levels below targets may constrain or limit satellite facility operations or schedules.

Completion date
This is an ongoing project. Costs will continue for O & M. (multi-year funding request)

Section 5. Budget

FY99 project budget (BPA obligated): $661,425

FY2000 budget by line item

Item	Note	% of total	FY2000
Personnel	7.9 FTE	%35	287,401
Fringe benefits	28%	%10	80,472
Supplies, materials, non-expendable property		%4	30,720
Operations & maintenance		%11	88,897
Capital acquisitions or improvements (e.g. land, buildings, major equip.)		%0	0
NEPA costs		%0	0
Construction-related support		%0	0
PIT tags	# of tags:	%0	0
Travel		%3	25,735
Indirect costs	34%	%21	174,497
Subcontractor		%0	0
Other	(fish rearing/marking support serv. to USFWS)	%16	134,439
TOTAL BPA FY2000 BUDGET REQUEST			$822,161

Cost sharing

Organization	Item or service provided	% total project cost (incl. BPA)	Amount ($)
		%0	
		%0	

		%0	
		%0	
	Total project cost (including BPA portion)		$822,161

Outyear costs

	FY2001	FY02	FY03	FY04
Total budget	$1,486,066	$1,549,511	$1,612,714	$1,675,574

Section 6. References

Watershed?	Reference
☐	Columbia River Inter-Tribal Fish Commission. 1995. Wy-Kan-Ush-Mi Wa-Kish-Wit, Volume II. Subbasin Plans - Umatilla River.
☐	Confederated Tribes of the Umatilla Indian Reservation and Oregon Department of Fish and Wildlife. 1989. Umatilla Hatchery Master Plan. Prepared for Northwest Power Planning Council, Portland, Oregon.
☐	Confederated Tribes of the Umatilla Indian Reservation and Oregon Department of Fish and Wildlife. 1990. Columbia Basin System Planning, Umatilla Subbasin, September, 1990. Prepared for Northwest Power Planning Council and Columbia Basin Fish and Wildl
☐	Confederated Tribes of the Umatilla Indian Reservation and Oregon Department of Fish and Wildlife. 1998. Umatilla Hatchery and Basin Annual Operation Plan for the period September, 1998 to August, 1999. Oregon Department of Fish and Wildlife, Pendleton,
☐	Lofy, Peter T. and Gerald D. Rowan. 1990. Operation, Maintenance and Evaluation of the Bonifer and Minthorn Springs Juvenile Release and Adult Collection Facilities. Annual Report - 1989. Contract No. DE-B179-84BP17622. Prepared for Bonneville Power Admin
☐	National Marine Fisheries Service. 1995. Biological Opinion for 1995 to 1998 Hatchery Operations in the Columbia River Basin. National Marine Fisheries Service, Portland, Oregon.
☐	Oregon Department of Fish and Wildlife. 1986. Umatilla Fisheries Restoration Plan - Present and Proposed Flow Enhancement and Fishery Rehabilitation Projects and Costs
☐	Oregon Department of Fish and Wildlife. 1986. A Comprehensive Plan for Rehabilitation of Anadromous Fish Stocks in the Umatilla River Basin. Project No. 84-10, Contract No. DE-AI179-84BP18008, Bonneviller Power Administration.
☐	Rowan, Gerald D.1991-1998. Operate and Maintain Umatilla Hatchery Satellite Facilities. Annual Reports 1990 - 1997. Contract No. DE-B179-84BP17622. Prepared for Bonneville Power Administration, Portland
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PART II - NARRATIVE

Section 7. Abstract

In the early 1980's, CTUIR and ODFW began implementing a comprehensive plan to supplement steelhead and re-establish salmon runs in the Umatilla River Basin. Artificial production, including the need for Umatilla Hatchery and associated satellite facilities, was identified as a key component in this effort.

This project provides for the operation and maintenance of both juvenile and adult satellite facilities. The goal is to assist in achievement of Umatilla Basin adult salmon and steelhead return goals by acclimating juvenile salmon and steelhead in natural production areas prior to release into the Umatilla River and operating adult holding/spawning facilities to provide salmon and steelhead eggs for Umatilla production.

The reduced stress and increased imprintation of juvenile salmon and steelhead released from acclimation ponds into the Umatilla Basin will increase smolt to adult survival back to both the Columbia and Umatilla rivers which specifically addresses the Columbia Basin Fish and Wildlife Program by contributing to increased adult returns to the Columbia Basin.

Results of the project are monitored and evaluated as part of the Umatilla Hatchery and Natural Production Monitoring and Evaluation programs. Data collected by this project is shared with the monitoring and evaluation programs and is also summarized in an annual report to BPA. The information is analyzed by CTUIR and ODFW managers and researchers, and each year, adaptive management decisions are made and incorporated into the Umatilla Hatchery and Basin Annual Operation Plan.

Section 8. Project description

a. Technical and/or scientific background

Runs of coho and fall and spring chinook salmon, once abundant in the Umatilla River, were essentially eliminated in the early 1900's. Losses have generally been attributed to the development of hydroelectric dams and to forestry, agriculture and irrigation practices. Summer steelhead is the single indigenous naturally spawning stock left in the basin with adult returns ranging from 700 to 2,300 annually.

In the early 1980's, CTUIR and ODFW began implementing a comprehensive plan to supplement steelhead and re-establish salmon runs in the Umatilla River Basin to partially mitigate for these losses. Recognizing that it would take years of intensive reintroduction and supplementation with hatchery fish to achieve natural and hatchery production goals, a high priority was placed on the implementation of an artificial propagation program including construction of a major hatchery and associated satellite facilities. In 1982, the NPPC adopted Measure 704 (i) (1) to construct juvenile release and adult collection facilities on the Umatilla Indian Reservation. In 1984, the measure was amended to include construction of a hatchery to produce 200,000 summer steelhead. In 1986, the measure was amended again to authorize construction of a facility capable of producing 160,000 pounds of salmon and steelhead, and finally, in 1987, the measure, now 7.4I.1 and 7.4I.2 was again amended to allow an increase in production to 290,000 pounds. Prior to construction of the hatchery, however, the measure required a facility Master Plan be approved by the Council. The Umatilla Hatchery Master Plan (ODFW and CTUIR 1989) was prepared by CTUIR and ODFW in cooperation with the Columbia River Intertribal Fish Commission (CRITFC), NPPC and BPA and was approved in 1989.

Umatilla Hatchery satellite facilities are an integral part of this program. They specifically address juvenile acclimation/release and adult broodstock holding/spawning needs which are essential to achieving the overall Umatilla Basin natural and hatchery production goals. The facilities allow fish managers to: 1) hold and spawn adult salmon and steelhead from Umatilla River broodstock and provide eggs for the Umatilla River production program; 2) acclimate/imprint smolts for increased survival and homing; and 3) release juveniles in targeted areas for re-establishment of natural production.
The increased survival from acclimation directly addresses the NPPC's rebuilding goal by contributing to increased adult returns to the Columbia River Basin. In addition, increased imprintation and homing from acclimation facilities located high in the basin address the needs identified by NMFS in their Hatchery Biological Opinion.

b. Rationale and significance to Regional Programs

This project is an essential part of a comprehensive Umatilla River fish restoration plan developed by CTUIR and ODFW in cooperation with the Council, BPA, NMFS, various irrigation districts and private landowners. The project helps to increase smolt to adult survival and provide eggs for the program and directly increases survival of salmon and steelhead to the upper Columbia River Basin which is consistent with the Council's Fish and Wildlife Program, U.S. v. OR Columbia River Fisheries Management Plan and the Pacific Salmon Treaty.

The successes being achieved in the Umatilla River to return once-exterpated salmon to a tributary to contribute towards natural spawning, broodstock collection, and Indian and non-Indian harvest objectives is being called a rare success in todays challenging times for Columbia River fisheries resources. It is hoped that some of the success principles such as hatchery supplementation of natural production can be employed elsewhere.

As a co-manager, CTUIR operates the Umatilla Hatchery satellite facilities in cooperation with ODFW as part of the Umatilla River Basin artificial production program. The satellite facilities acclimate smolts from and provide eggs to Umatilla, Bonneville, Little White Salmon, Cascade and Carson National Fish Hatcheries operated by ODFW and USFWS. Broodstock are collected and transported by the Umatilla Fish Passage Operations project (#8802200). The Umatilla Passage Facilities O & M (project #8343600) project also assists in preventative and heavy maintenance at all satellite facilities.

c. Relationships to other projects

The Umatilla Hatchery Satellite Facilities O&M project is one of two critically linked projects that together form the basis for the Umatilla artificial production O&M umbrella proposal identified in Section 3. The two projects are dependent upon each other in order to meet the artificial production objectives in the basin. The Umatilla Hatchery O&M project receives eggs from this project, provides incubation and rearing, then returns pre-smolts back to acclimation facilities operated under this project. Multi-year funding is being requested for these related projects listed under the Umatilla Artificial Production O&M umbrella. The incubation and rearing and marking of Umatilla spring chinook at Little White Salmon Hatchery and marking of Umatilla spring chinook at Carson Hatchery is now proposed under this project (formerly proposed separately under project #8906500 – USFWS "Missing Hatchery Production Groups"). The project also receives smolts from Bonneville, and Cascade Hatcheries operated by ODFW. Other key components of the Umatilla Fish Restoration Program include fish passage, habitat, and flow enhancement measures funded by the Bureau of Reclamation and BPA. The Umatilla Passage Facilities O & M project with the involvement from Westland and West Extension Irrigation Districts also assists in preventative and heavy maintenance at all satellite facilities.

Several projects work closely together to monitor population status. In addition to hauling adults and juveniles during low water conditions and providing broodstock for spawning and coded-wire tag recovery information, the Umatilla River Fish Passage Operations Project provides a comprehensive monitoring opportunity for assessing adult returns to the Umatilla River. The Umatilla Basin Natural Production M & E Program conducts extensive spawning ground and juvenile outmigration surveys to assess natural production. The Umatilla Hatchery M & E project provides biological information related to the operation of the satellite facilities and evaluates the success of the artificial production program. The Umatilla River WEID/Screens M & E project also provides outmigration information related to the production program.

d. Project history (for ongoing projects)

The Bonifer acclimation facility was the first facility of its kind completed by the NPPC's Fish and Wildlife Program. The facility was constructed in the fall of 1983 and began operations in 1984. In 1984 and 1985, the facility was operated under project number 82-18 and the title was "Operation and Maintenance of the Bonifer Springs Juvenile

Acclimation and Adult Holding Facility". Minthorn Springs was completed in late 1985 and began operations in 1986. In 1986, both facilities were operated under project number 83-435 and the title of the project was changed to "Minthorn Springs Creek Summer Juvenile Release and Adult Collection Facility". In 1991, Umatilla Hatchery began operations, and in 1994 and 1995, respectively, Imaques C-mem-ini-kem and Thornhollow acclimation and release facilities were built. In 1995, the project title was changed to "Umatilla Hatchery Satellite Facilities Operation and Maintenance" but the project number remained the same. In 1996 and 1997, adult holding and spawning facilities were built on the Umatilla and Walla Walla Rivers. One additional acclimation and release facility and one hatchery are scheduled for completion in 1999 and 2000, respectively, that will be operated by this project.

Salmon runs were extinct in the Umatilla River Basin prior to implementation of the Umatilla River Fish Restoration Program. This plan, of which the satellite facilities are a key component, has resulted in thousands of fish being caught in ocean and Columbia River sport and commercial fisheries and in annual returns of salmon and steelhead to the Umatilla River of 3,500 to 8,000 adults in the last 10 years. Since the satellite facilities have been in operation, approximately 19.9 million summer steelhead, coho and fall and spring chinook salmon juveniles have been acclimated and released. The number of fish acclimated annually has risen from 20,000 in 1983 to over 5.6 million projected for 1999. In addition, approximately 6,100 broodstock have been collected and held for spawning and approximately 8.95 million eggs have been taken and transported to ODFW hatcheries for incubation, rearing and later release back into the Umatilla Basin. Quarterly reports and an annual report to BPA provide information on juvenile acclimation, adult holding and spawning, juvenile and adult physical health, juvenile outmigration, maintenance and repair of facilities and adult survival and contributions. Annual reports are available for each year since project inception.

Data collected by this project is shared with Umatilla Hatchery and Natural Production Monitoring and Evaluation Programs and analyzed by CTUIR and ODFW managers and researchers. Based on information provided, adaptive management decisions are made each year by basin co-managers. These decisions are incorporated into the Umatilla Hatchery and Basin Annual Operation Plan.

The project has averaged $222,734 annually over the past 12 years. The maximum cost is anticipated to be $661,425 in FY 99 due to more facilities and increased fish spawning and juvenile release responsibilities.

e. Proposal objectives

The following project objectives for 2000 are part of overall objectives to operate and maintain the satellite facilities.

Objective 1: Increase adult salmon and steelhead survival and homing to the Umatilla River Basin. Approximately 150,000 summer steelhead, 1.5 million coho, 480,000 fall chinook yearlings, 2.682 million fall Chinook subyearlings and 810,000 spring chinook

yearlings will be acclimated and released in 2000. The Umatilla Fish Restoration Program was designed to increase adult returns to the Columbia River by 91,000 fish, which directly addresses the NPPC's goal to increase adult returns to the Columbia River. Total adult salmon and steelhead return goals to the Umatilla Basin are approximately 48,000 fish. The Umatilla Hatchery Master Plan identifies adult return goals to the Umatilla Basin for each target species.

During low water conditions, juvenile salmonids are trapped at the Westland Canal juvenile facility and hauled to the mouth of the Umatilla River by the Umatilla Fish Passage Operations Project. During the trapping period, juveniles will be sampled and the data will be compared to data taken at release to give an indication of outmigration timing for different release groups. The information will help managers determine which release strategies are most effective.

Determination of total survival, contribution to ocean and Columbia River fisheries and escapement to the Umatilla River and other terminal area of all coded-wire tagged groups released into the Umatilla River Basin will help managers determine which rearing and release strategies are most effective.

Proper maintenance will allow juvenile acclimation/release facilities to be operated efficiently to maximize juvenile survival.

Objective 2: Provide eggs for Umatilla River production programs. Approximately 227,000 summer steelhead eggs will be taken and transported to Umatilla Hatchery. The number of spring chinook eggs to be taken will be determined in mid-1999 and incorporated into the 1999-2000 Umatilla Hatchery and Basin Annual Operation Plan. The number of coho and fall chinook eggs to be taken will be determined in mid-2000 and incorporated into the 2000-2001 Umatilla Hatchery and Basin Annual Operation Plan. This objective contributes to the NPPC goal of maintaining biological diversity among anadromous fish populations.

Proper maintenance will allow adult holding/spawning facilities to be operated efficiently to maximize fish survival.

Objective 3: Participate in planning, design, and review process for the new Umatilla Hatchery Supplement and the NEOH-Walla Walla River Hatchery. This will help to ensure that facility needs and various details are addressed.

Objective 4: Increase production of Carson Stock spring chinook for release into the Umatilla River. Juvenile spring chinook received from USFWS facilities (100,000 from Carson and 350,000 from Little White Salmon Hatchery) will be acclimated and released at tribal satellite facilities to contribute towards achievement of basin adult return goals.

f. Methods

Objective 1: Juvenile salmon and steelhead will be transported by ODFW to the acclimation facilities from ODFW and USFWS hatcheries. Proposed acclimation periods are two weeks for fall chinook subyearlings and four weeks for steelhead, coho, and fall and spring chinook yearlings. The fish will be fed Biomoist feed twice each day at a proposed rate of 1% BWD for yearlings and 1.5% BWD for subyearlings. Mortalities will be removed daily. ODFW pathology personnel will be available to address specific disease problems should they occur and they will routinely sample each release group and test for selected pathogens. ODFW research personnel will sample the fish the day of release for size and descaling. Water temperature and dissolved oxygen measurements will be taken daily during acclimation. The critical assumption is that juvenile acclimation will increase overall survival and homing to the Umatilla River.

During low water conditions, juvenile salmonids are trapped at the Westland Canal juvenile facility and hauled to the mouth of the Umatilla River by the Umatilla and Walla Walla Basins Trap and Haul Program. During the trapping period, juveniles will be sampled one to three times per week for size, species composition and marks. Weight samples will be taken using standard hatchery practices to estimate the average size of the fish. The weight samples will be used to estimate the total number of fish hauled on sample days by multiplying the number of fish per pound by the number of pounds loaded. This data is compared to data taken at release to give an indication of outmigration timing.

Snouts and associated biological data will be collected from coded-wire tagged fish at the satellite facilities. In addition, snouts and data will be collected by fish passage operations personnel at Three Mile Dam and from Umatilla River surveys conducted by other programs. Snouts will be delivered to ODFW for retrieval and decoding. Umatilla River coded-wire tag recoveries will be expanded based on sampling rates and the information will be reported to Pacific States Marine Fisheries Commission (PSMFC). By accessing and expanding data from PSMFC and other appropriate sources, total survival, contribution to ocean and Columbia River fisheries and escapement to the Umatilla River and other terminal locations will be determined for all coded-wire tagged groups released into the Umatilla Basin. This data is then used to evaluate results of the project and make adaptive management decisions related to the overall program.

In cooperation with the Umatilla Passage Facilities O & M project, maintenance will be performed on all electrical and mechanical equipment, pumps, water supply systems, screens, fencing, fishways, buildings and grounds. Other maintenance will be conducted as necessary.

Objective 2: In cooperation with CTUIR and ODFW fish passage operations personnel, adult steelhead will be collected at Three Mile Dam on the Umatilla River and transported to Minthorn for holding and spawning. To help maintain the genetic integrity of the hatchery population, the first priority for broodstock will be to collect unmarked fish at a female to male ratio of 1:1 and at a rate of 10% of the unmarked run by month. To ensure meeting the broodstock goal, coded-wire tagged hatchery fish may also be collected. Fall chinook and coho will be collected, held and spawned at Three Mile Dam.

Spring chinook will be transported to South Fork Walla Walla for holding and spawning. Coho and fall and spring chinook will also be collected throughout the run and at a female to male ratio of 1:1. All broodstock are treated with formalin to help control fungus. It is anticipated that spring chinook will be injected with Oxytetracycline 100 and Erythromycin 200 at the time of collection and once more prior to spawning. Fall chinook may also receive one or both injections. That decision will be made in mid-1999 and will be incorporated into the Umatilla Hatchery and Basin Annual Operation Plan. CTUIR and ODFW personnel will spawn the adults and assist ODFW in collecting ovarian and tissue samples to be tested by ODFW Eastern Oregon Pathology Laboratory for the presence of selected pathogens . Whenever possible, a 3 x 3 spawning matrix for summer steelhead will be used, while coho and chinook salmon will be spawned 1:1. Eggs will be water hardened in iodophor and will be transported to Umatilla and possibly other hatcheries. Physical data will be collected as part of the facility monitoring. The critical assumption is that genetic integrity will be maintained.

In cooperation with the Umatilla Passage Facilities O & M project, maintenance will be performed on all electrical and mechanical equipment, pumps, water supply systems, screens, fencing, fishways, buildings and grounds. Other maintenance will be conducted as necessary.

Objective 3: Will meet with BPA, ODFW, engineers and architectural firms to discuss plans and designs for the Umatilla Hatchery Supplement and NEOH-Walla Walla Hatchery facilities scheduled for completion at the S. Fk.Walla Walla River site. Input will emphasize facility needs and capabilities to meet production, holding and spawning goals.

Objective 4: The Little White Salmon/Willard National Fish Hatchery Complex staff will complete the rearing of 350,000 Brood Year 1998 spring chinook salmon (CHS) for transfer and release into the Umatilla River during spring 2000. Staff will adipose clip and wire tag (ADCWT) 40,000 of these fish (and also ADCWT 20,000 of the 100,000 Umatilla CHS from Carson NFH). Staff will initiate rearing of 350,000 Brood Year 1999 CHS destined for release into the Umatilla River during spring 2001. In addition, work will include the collection, holding and spawning of adult CHS during 2000. Staff will also begin the initial feeding of Brood Year 2000 CHS.

The Lower Columbia River Fish Health Center (LCRFHC) will conduct exams to assess the health of fish destined for upriver release by the Umatilla Tribe. Regular juvenile exams will be performed monthly; the diagnostic, ponding, and pre-release exams will be performed as necessary. Exams include screening for viruses on cell culture and blood smears; bacteria on media; biochemical tests, fluorescent antibody tests, and enzyme-linked immunosorbent assay (ELISA); and for parasites by light microscopy, pepsin-trypsin digest, or histological preparations.

Exams for returning broodstock spring chinook salmon will also be conducted to determine the disease profile during spawning. The U.S. Fish & Wildlife fish health policy requires that every CHS be tested for bacterial kidney disease (BKD) in order to

permit segregation/culling of progeny to minimize disease transmission in our hatcheries.

g. Facilities and equipment

The Bonifer juvenile release facility consists of a 1.75 acre earthen pond and concrete outlet water control structure which also functions as a fish trap. The pond holds approximately 4.5 acre-feet of water and is fed by three nearby springs. Flows range from approximately 750 to 1,850 gpm. Since the facility began operations, water quality has been degraded resulting in heavier weed growth and lower dissolved oxygen levels in the spring and summer which limits periods of use. In addition, siltation has decreased the volume of the pond. The facility still functions well for juvenile steelhead acclimation and release during the period March to May.

The Minthorn juvenile release facility is located on Minthorn Springs Creek which is formed from the inflow of several springs. The facility includes two raceways (each 120 x 12 x 4 feet), pump station, standby generator and outlet water control structure which also functions as a fish trap and summer steelhead broodstock holding area. Water through the brood holding area is supplied by gravity and ranges from approximately 500 to 2,100 gpm. Water supply to the raceways is pumped from the creek at a rate of approximately 800 gpm per raceway.

The Imeques juvenile release facility includes a water intake structure with automatic screen cleaner, water headbox/distribution system, storage building, four concrete acclimation ponds (approximately 13,000 cubic feet each) and water outlet and fish release structure. Water is supplied by gravity flow (approximately 1,600 gpm per pond).

The Thornhollow juvenile release facility includes a water intake structure with automatic screen cleaner, pump station, water headbox/distribution system, storage building, two concrete acclimation ponds (approximately 13,000 cubic feet each) and water outlet and fish release structure. Water is supplied by gravity flow to the pump station where it is pumped into the headbox. Water flow is approximately 1,600 gpm per pond. No emergency life support system exists. A standby generator is needed to operate the water supply pumps as an alternative to releasing fish during emergency conditions.

The Three Mile Dam adult holding/spawning facility includes a water intake system with automatic screen cleaning, pump station having a pumping capacity of 8,000 gpm, six adult holding ponds (each 90 x 10 x 9 feet), mechanical fish crowder, visitor facilities including restrooms, standby generator, and chemical, bunkhouse and spawning buildings. The bunkhouse includes two bunk rooms, kitchen area, office space, conference room, shop and restrooms. The spawning building includes a fish lift, electroshock anesthesia system, sorting and spawning facilities, wet and dry rooms, walk-in cooler and restroom.

The South Fork Walla Walla adult holding/spawning facility includes a water intake system with automatic screen cleaning, pump station having a pumping capacity of 18,500 gpm, ozone water treatment system including office, pollution abatement pond, five adult holding ponds (each 90 x 10 x 10 feet), mechanical fish crowder, standby generator, chemical storage and spawning buildings and two homes for night watch personnel. The spawning building includes a fish lift, electroshock anesthesia system, sorting and spawning facilities, wet and dry rooms, walk-in cooler/freezer, office space and restroom. In addition, there are two computers for monitoring the facility operations.

The project generally has sufficient office, lab and shop space and computers. Additional support vehicles are needed as a result of increased manpower and number of facilities. Other high cost equipment needs include a pressure washer(s), trash pump(s), welder, table saw, drill press, etc. The pressure washer(s) and trash pump(s) are needed because many jobs occur simultaneously at the different facilities and the number of facilities has increased. The table saw and other equipment is needed to maintain the facilities which have become more numerous and complex.

One additional acclimation and release facility and one hatchery are scheduled for completion in 1999 and 2000, respectively. Designs have not been finalized and additional equipment will be required upon their completion.

The Westland Irrigation District (Umatilla Passage Facilities O & M Program) is also under contract with BPA to assist in heavy maintenance and repair of all satellite facilities.

h. Budget

Due to the critical annual need for this project as a key component in the Umatilla Fisheries Restoration Program, multi-year funding is being requested.

Personnel Costs are based on the equivalent of 7.9 full time employees. Wages are set and follow similar range and step schedule as federal employees. Facility supplies, utilities and maintenance expenses are based on previous operational years. USFWS expenses are based on their estimate for producing the Umatilla programmed spring chinook. The overall project cost increased about $160,000 over the previous years due largely to the addition of the USFWS fish production role (Objective 6). Outyear costs are projected to increase substantially in FY 2001 due to the anticipated completion of the Umatilla Supplement Hatchery and NEOH-Walla Walla Hatchery and related O&M expenses.

Beginning in FY 2000, funding for the USFWS to provide spring chinook rearing, marking, health monitoring, and administrative support for Umatilla production at Little White Salmon (NFH (350,00) and Carson NFH (100,000) will be under this project. The USFWS cost projectives for these services are $134,439.

Section 9. Key personnel

Name: Gerald D. Rowan

Position: Project Leader – 1 FTE

Education: Oregon State University, Corvallis, Oregon, 1972-1974. Graduate work in Department of Fisheries and Wildlife. Major field in fisheries science. Integrated minor. Thesis topic: Effects of Temperature and Ration Size on the Growth of Juvenile Chum Salmon (*Oncorhynchus keta*) in Salt Water.

Oregon State University, Corvallis, Oregon, 1967-1971. Undergraduate work in Department of Fisheries and Wildlife. Major field in fisheries science. Integrated minor.

Work Experience:

1990 to present	Artificial Production Biologist, CTUIR, Pendleton, Oregon. Full-time (1 FTE). Responsible for all project activities including development of annual work statements and budgets, writing quarterly and annual reports, purchasing supplies and materials, data collection and summarization, work scheduling, coordination and operation of juvenile acclimation/release and adult holding/spawning facilities, etc.
1978-1989	Freshwater Facilities Manager, Anadromous Inc., St. Helens, Corvallis and Ft. Creek, Oregon. Responsible for all aspects of managing three freshwater hatcheries including feed and growth programming, vaccination, grading, egg and juvenile and adult transport operations, fish health monitoring and egg and fish treatments, tagging operations, ordering supplies and materials, hiring and firing, adult holding and spawning, incubation, water quality monitoring, etc. Worked with coho, fall and spring chinook salmon and atlantic salmon.
1976-1978	Oregon Aqua Foods, Newport, Toledo and Springfield, Oregon. Worked as general fish culturist at Newport and Springfield facilities and as fresh water hatchery manager at Toledo facility. Duties as fresh water manager included all aspects of managing a freshwater hatchery. Worked with rainbow trout, chum, pink, coho and chinook salmon.

1975	Aquaculturist, Sand Point Aquaculture Program, Sand Point, Alaska. Responsible for overall development of fish culture program at a small high school. Taught course in fish husbandry, built and operated a small demonstration hatchery and assisted in initial development of fish culture curriculum for state school system.
Publications:	Have co-written 1 annual project report and have written 8 annual reports.

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Name: Christian C. Dearing

Position: Maintenance Supervisor – 1 FTE

Education:

Walla Walla Community College, Walla Walla, WA, 1998.
Undergraduate studies in electricity and irrigation technology.

Henley High School, Klamath Falls, OR., 1981-1984
Emphasis on vocational courses to include basic carpentry and welding.

Work Experience:

4/98-present	Satellite Facilities Maintenance Supervisor, CTUIR, Pendleton, Oregon.
9/95 – 3/98	Maintenance Supervisor, Umatilla Housing Authority, Pendleton, Oregon.
5/95-7/95	I-90 Sound walls, Kiewit Pacific Company, Spokane, Washington.
7/94-11/94	Whitworth College Addition, Goebel Construction, Spokane, Washington.
6/93-7/94	Fairchild AFB Home Renovations, Thermalguard Equipment Addition, Garco Construction, Spokane, Washington
4/91-4/93	Maintenance Supervisor/H.I.P., CTUIR, Pendleton, Oregon.
1986-1991	Construction Crewleader,U.S. Navy Sea Bees, Port Hueneme, California.

Certified Training:

10/97	Housing and Urban Development

3/95	Oregon – Washington – Idaho Carpenters Apprentice Program
1/95	UBC Construction Steward
7/92	CABO Electrical Code Workshop
6/91	CABO One & Two Family Dwelling Codes
5/90	Builder “C1” Advanced – Class 90020
2/90	SeaBee Construction Management Course

Section 10. Information/technology transfer

Coded-wire tag recovery information for all Umatilla River release groups is reported to Pacific States Marine Fisheries Commission and is incorporated into their data bank. In addition, data collected by this project is shared with other Umatilla Basin programs through technical and scientific meetings and is analyzed by CTUIR and ODFW managers and researchers. Based on information provided, adaptive management decisions are made each year by basin co-managers. These decisions are incorporated into the Umatilla Hatchery and Basin Annual Operation Plan.

The information is also summarized in quarterly reports and an annual report to BPA. Annual reports are available for each year since project inception. In addition, the satellite facilities are highly visible and open to the public. Information is dispersed to the public through private and public tours.

Congratulations!